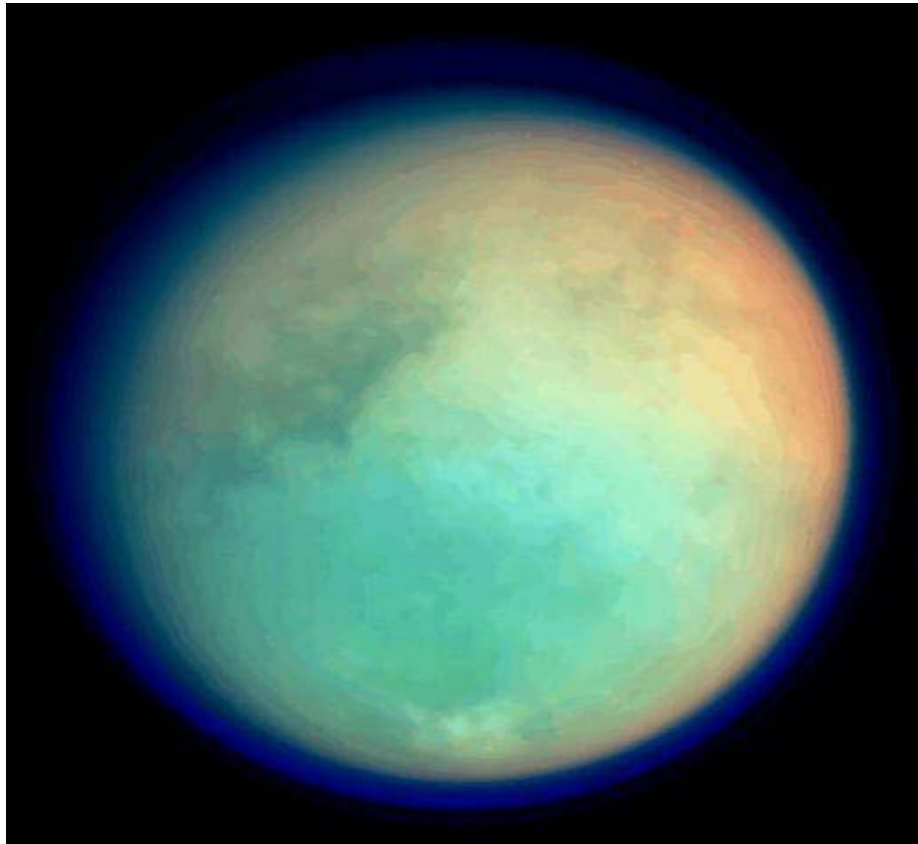


C A S S I N I



T I T A N    **0 2 6 T I ( T 1 6 )**  
MISSION DESCRIPTION

July 2006

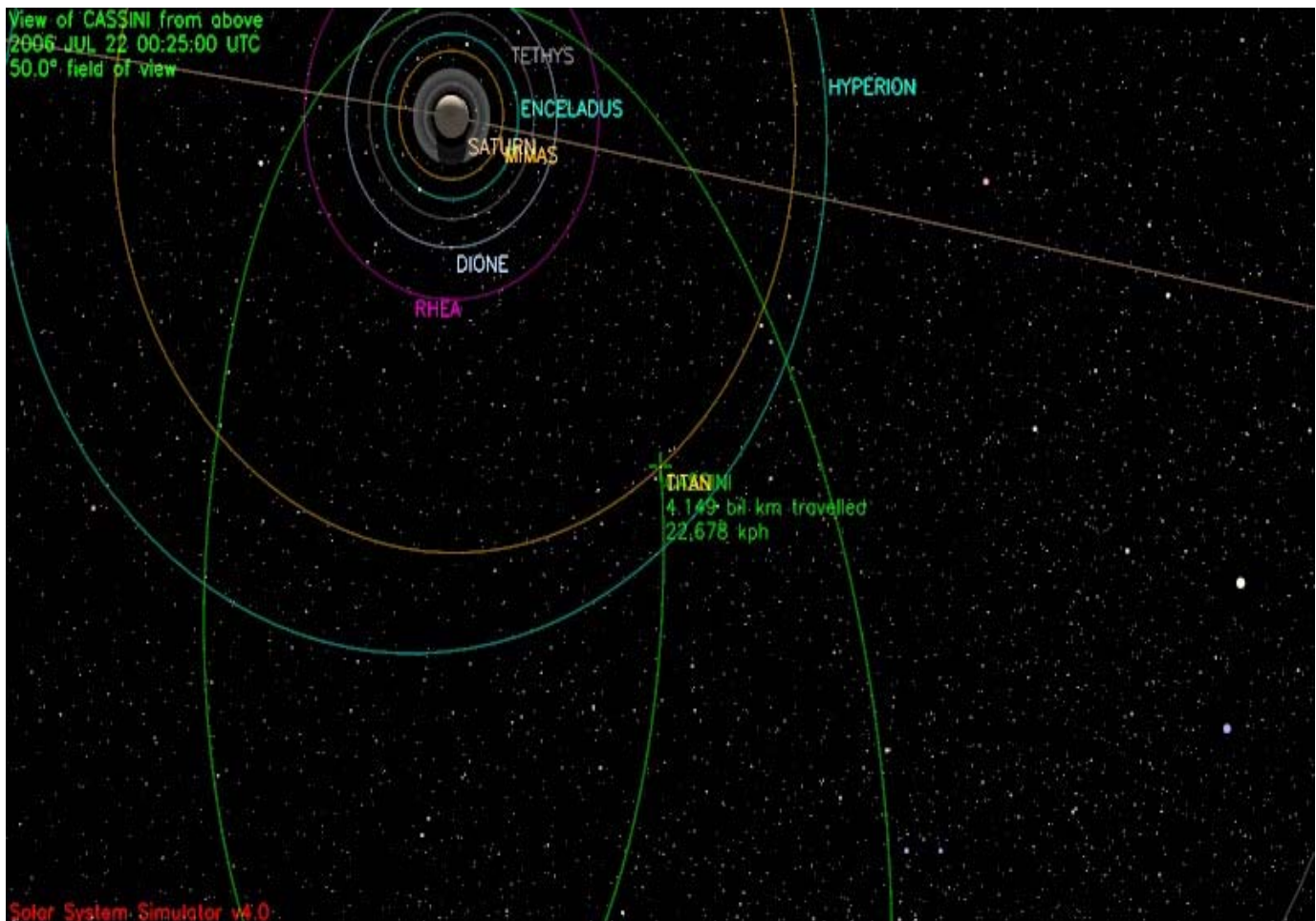
**Jet Propulsion Laboratory**  
California Institute of Technology



## 1.0 OVERVIEW

Only 20 days after Titan-15, Cassini returns to Titan for its seventeenth targeted encounter. The closest approach to Titan occurs on Saturday, July 22, at 00:25 spacecraft time (July 21 at 6:43 p.m. Pacific Time) at an altitude of 950 kilometers (593 miles) above the surface and at a speed of 5.8 kilometers per second (12,977 mph). The latitude at closest approach is 85° (near polar) and the encounter occurs on orbit number 26.

This encounter is set up with two maneuvers: an apoapsis maneuver on July 10, and an approach maneuver, scheduled for July 18. This inbound encounter occurs about 2 days before Saturn closest approach.



## 1.1 ABOUT TITAN

If Titan were in orbit around the Sun, it would likely stand out as the most important object in the solar system for humans to explore. Titan, the size of a terrestrial planet, has a dense atmosphere of nitrogen and methane and a surface covered with organic material. It is Titan that is arguably Earth's sister world and the Cassini-Huygens mission considers Titan among its highest priorities.

Although it is far colder and lacks liquid water, the chemical composition of Titan's atmosphere resembles that of early Earth. This, along with the organic chemistry that takes place in Titan's atmosphere, prompts scientists to believe that Titan could provide a laboratory for seeking insight into the origins of life on Earth. Data from the Huygens probe, which touched down on Titan's surface in January 2005, and the Cassini orbiter has shown that many of the processes that occur on Earth also apparently take place on Titan – wind, rain, volcanism, tectonic activity, as well as river channels, and drainage patterns all seem to contribute in shaping Titan's surface. However, at an inhospitable  $-290^{\circ}\text{F}$  ( $-179^{\circ}\text{C}$ ), the chemistry that drives these processes is fundamentally different from Earth's. For example, it is methane that performs many of the same functions on Titan that water does on Earth.

The Huygens probe landed near a bright region now called Adiri, and photographed light hills with dark river beds that empty into a dark plain. It was believed that this dark plain could be a lake or at least a muddy material, but it is now known that Huygens landed in the dark region, and it is solid. Scientists believe it only rains occasionally on Titan, but the rains are extremely fierce when they come.

Only a small number of impact craters have been discovered. This suggests that Titan's surface is constantly being resurfaced by a fluid mixture of water and possibly ammonia, believed to be expelled from volcanoes and hot springs. Some surface features, such as lobate flows, appear to be volcanic structures. Volcanism is now believed to be a significant source of methane in Titan's atmosphere. However, there are no oceans of hydrocarbons as previously hypothesized. Dunes cover large areas of the surface.

The Cassini-Huygens mission, using wavelengths ranging from ultraviolet to radio, is methodically and consistently revealing Titan and answering long-held questions regarding Titan's interior, surface, atmosphere, and the complex interaction with Saturn's magnetosphere. While many pieces of the puzzle are yet to be found, with each Titan flyby comes a new data set that furthers our understanding of this world as we attempt to constrain scenarios for the formation and evolution of Titan and its atmosphere.

## 1.2 TITAN-16 SCIENCE HIGHLIGHTS

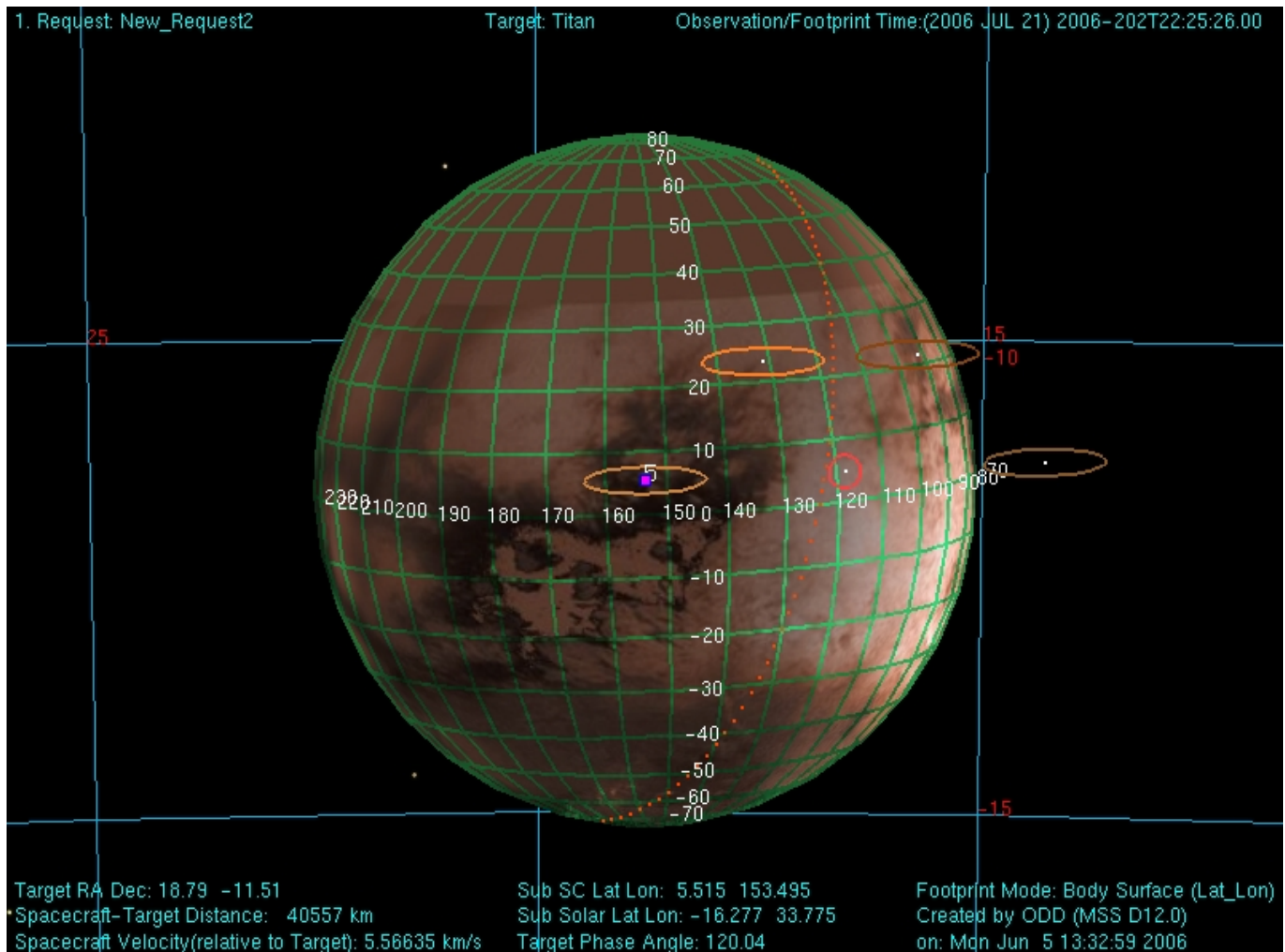
- One of the high priority RADAR SAR passes. High resolution over Titan's arctic (high northern latitudes) and down to its tropics at two longitudes. This will be our first view of the northern latitudes, which is currently in perpetual winter darkness.
- T16, one of the lowest passes currently planned in the mission, and one of the best ride-along observations for INMS.
- UVIS will observe the star Alpha Virgo as it passes behind Titan's atmosphere. UVIS objectives are to measure vertical and horizontal profiles for N<sub>2</sub>, methane and other hydrocarbons. Temperature and photochemistry of the upper atmosphere, and measure haze optical and physical properties and altitude/latitude distribution.
- In general the MAPS observations at T16 are the first in a series (T16-T24) of flybys in the pre-dawn sector. This is a good opportunity to do comparison observations and correlation between the data sets.
- VIMS has inbound and outbound observations that are searching for mid-latitude clouds. There are some high resolution observations at approximately 25 degrees latitude, 110 degrees longitude.
- CIRS will focus on the northern polar limb, this time at 45 degrees north. Inbound, there is a mid-IR composition limb integration at highest spectral resolution. Outbound, CIRS will perform a far-IR limb composition at the same latitude, later followed by a mid-IR limb temperature map over the winter polar vortex boundary region (30-75 degrees north). CIRS will finish up with a slow scan across the disk for surface temperature and aerosol mapping.

## 1.3 SAMPLE SNAPSHOTS

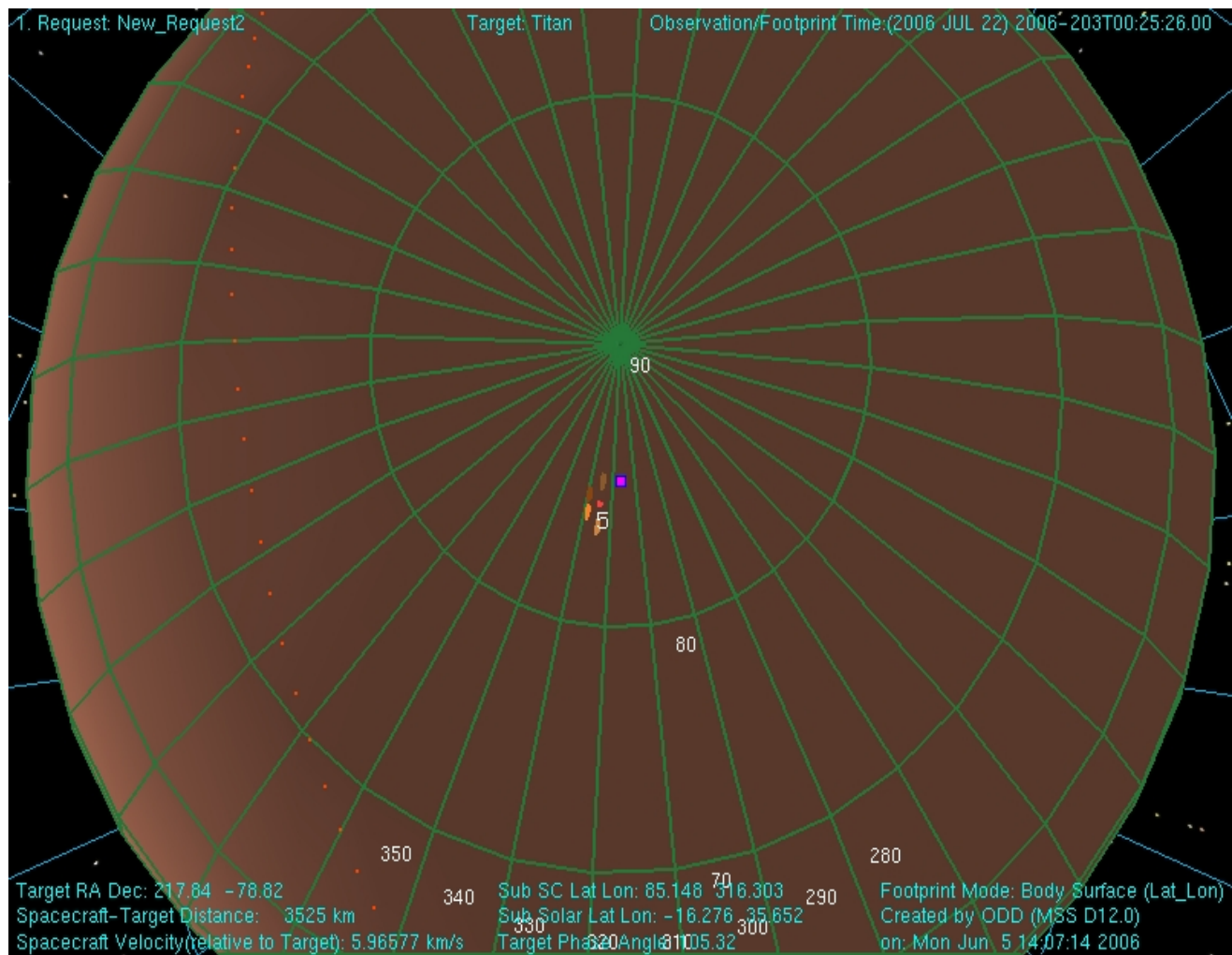
Three views of Titan from Cassini before, during, and after closest approach to Titan are shown below. The views are oriented such that the direction towards the top of the page is aligned with the Titan North Pole. The five Radar beams are shown in the first two views and the remote sensing instrument fields of view are shown in the third assuming they are pointed towards the center of Titan. The sizes of these fields of view vary as a function of the distance between Cassini and Titan. A key for use in identifying the remote sensing instruments fields of view in the figures is listed at the top of the next page.

### Key to ORS Instrument Fields of View in Figures

Instrument Field of View	Depiction in Figure
ISS WAC (imaging wide angle camera)	Largest square
VIMS (visual and infrared mapping spectrometer)	Next largest pink square
ISS NAC (imaging narrow angle camera)	Smallest green square
CIRS (composite infrared spectrometer) – Focal Plane 1	Small red circle near ISS_NAC FOV
UVIS (ultraviolet imaging spectrometer)	Vertical purple rectangle centered within largest square

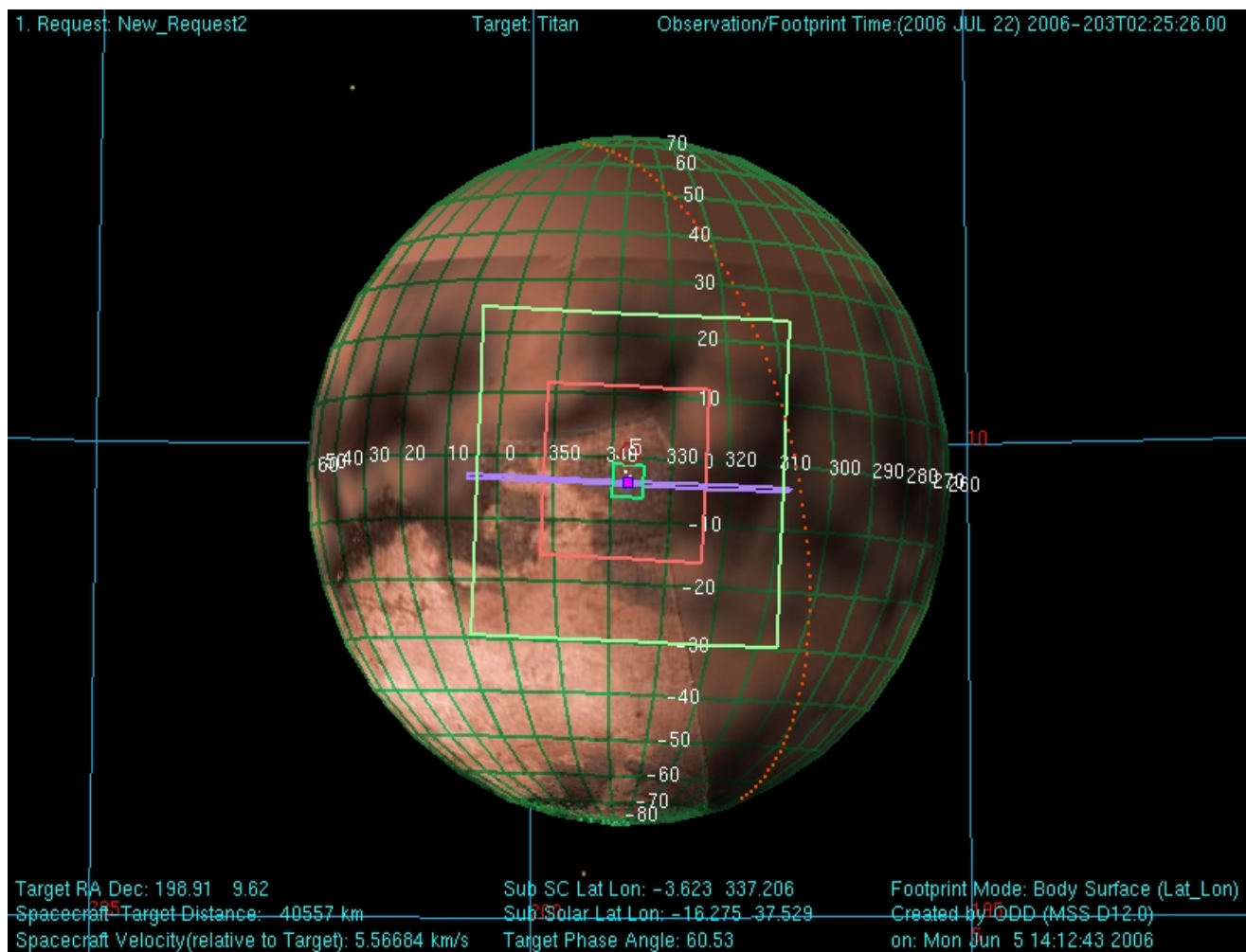


View of Titan from Cassini 2 hours before Titan-16 closest approach



**View of Titan from Cassini at Titan-16 closest approach**





**View of Titan from Cassini 2 hours after Titan-16 closest approach**



Cassini Titan-16 Timeline - July 2006

Colors: yellow = maneuvers; blue = geometry;  
pink = T16-related; green = data playbacks

Orbiter UTC	Ground UTC	Pacific Time	Time wrt T16	Activity	Description
	Jul 17 01:30	Sun Jul 16 06:30 PM	T16-05d00h	Start of Sequence S22	Start of Sequence which contains Titan-16.
199T14:51:00	Jul 18 16:15	Tue Jul 18 09:15 AM	T16-03d10h	OTM #67 Prime	Titan-16 minus 3 day targeting maneuver
200T14:51:00	Jul 19 16:15	Wed Jul 19 09:15 AM	T16-02d10h	OTM #67 Backup	
		Thu Jul 20 06:15 PM	T16-01d01h		
		Thu Jul 20 06:15 PM	T16-01d01h		
202T00:21:00	Jul 21 01:45	Thu Jul 20 06:45 PM	T16-01d00h	Deadtime	Used to accommodate changes in flyby time
202T00:36:00	Jul 21 02:00	Thu Jul 20 07:00 PM	T16-23h49m	Infrared (IR) global mapping	Search for and characterize clouds.
202T15:25:00	Jul 21 16:49	Fri Jul 21 09:49 AM	T16-09h00m	Far IR limb observation	Stratospheric studies
202T17:25:00	Jul 21 18:49	Fri Jul 21 11:49 AM	T16-07h00m	IR high resolution imaging	Regional mapping of surface
202T19:06:00	Jul 21 20:30	Fri Jul 21 01:30 PM	T16-05h19m	Turn RADAR toward Titan	
202T19:15:00	Jul 21 20:39	Fri Jul 21 01:39 PM	T16-05h10m	RADAR radiometry	Studies of surface properties
202T22:42:00	Jul 22 00:06	Fri Jul 21 05:06 PM	T16-01h43m	RADAR scatterometry	Surface roughness and composition studies
202T23:33:00	Jul 22 00:57	Fri Jul 21 05:57 PM	T16-00h52m	Transition to thrusters	Study surface and sub-surface properties
202T23:55:00	Jul 22 01:19	Fri Jul 21 06:19 PM	T16-00h30m	RADAR Altimetry	Studies involving altitude of surface features
203T00:16:00	Jul 22 01:40	Fri Jul 21 06:40 PM	T16-00h09m	Titan Wake Crossing	
203T00:18	Jul 22 01:42	Fri Jul 21 06:42 PM	T16-00h07m	RADAR synthetic aperture radar	High resolution coverage of high northern latitudes
203T00:10	Jul 22 01:34	Fri Jul 21 06:34 PM	T16-00h15m	Ion & Neutral Mass Spectrometer	Determine the atmospheric & ionospheric thermal structure
203T00:10	Jul 22 01:34	Fri Jul 21 06:34 PM	T16-00h15m	Magnetospheric & Plasma Science activities	Analysis of plasma wake, ions escaping from Titan, and Titan's interaction with Saturn's magnetosphere
203T00:25:00	Jul 22 01:49	Fri Jul 21 06:49 PM	T16+00h00m	Titan-16 Flyby Closest Approach Time	Altitude = 950 km (593 miles), speed = 5.8 km/s (13,000 mph); 105 deg phase at closest approach
203T00:55:00	Jul 22 02:19	Fri Jul 21 07:19 PM	T16+00h30m	Ultraviolet stellar occultation	High altitude atmospheric studies
203T01:03:00	Jul 22 02:27	Fri Jul 21 07:27 PM	T16+00h38m	Transition back to reaction wheels	
203T01:40:00	Jul 22 03:04	Fri Jul 21 08:04 PM	T16+01h15m	Far IR limb observations	Study of stratospheric compounds
203T02:40:00	Jul 22 04:04	Fri Jul 21 09:04 PM	T16+02h15m	Far IR stares	Surface and tropopause temperature and methane abundance
203T07:40:00	Jul 22 09:04	Sat Jul 22 02:04 AM	T16+07h15m	IR cloud observations	Cloud mapping & lightning search
203T13:14:00	Jul 22 14:38	Sat Jul 22 07:38 AM	T16+12h49m	Deadtime	Used to accommodate changes in flyby time
		Sat Jul 22 07:54 AM	T16+13h05m		
203T14:00:00	Jul 22 15:24	Sat Jul 22 08:24 AM	T16+13h35m	Begin Playback of T16 Data	Goldstone 70M
203T23:36:00	Jul 23 01:00	Sat Jul 22 06:00 PM	T16+23h11m	End Playback of T16 Data	

OWLT (mins)	84
C/A Time	Fri Jul 21 06:49 PM

Event Name: T16\_26TI, Targeted Titan, Inbound. 060323 SPK: Table Creation Date (YYMMDD) 060706

Event Name at Event Time Only	SCET Date (YYYY-DOYTHH:MM:SS.FF) UTC	SCET Date (MM/DD/YY YY HH:MM:SS) UTC	SCET Date (MM/DD/YYYY HH:MM:SS) ET	Hours wrt Event Epoch	Minutes wrt Event Epoch	S/C Range (km)	S/C Altitude wrt Tri-axial Ellipsoid (km)	S/C North Latitude (deg)	S/C West Longitude wrt SMEQPM Date (deg)	S/C Inertial Velocity (km/s)	S/C Radial Inertial Velocity (km/s)	S/C Tangential Inertial Velocity (km/s)	Central Body Angular Diameter (mrad)	Phase = Sun-Central Body-S/C Angle (deg)	Sun-S/C-Central Body Angle (deg)	S/C Local True Solar Time wrt Central Body (hh:mm)	Sub-solar Latitude wrt Central Body (deg)	Sub-solar West Longitude wrt Central Body SMEQPM Date
	2006-202T00:25:26.81	21-Jul-06	00:26:32	-24	-1440	489,666.3	487,091.3	0.6	134.1	5.868	-5.861	0.275	10.5	119.8	60.2	03.56	-16.3	13.1
	2006-202T04:25:26.81	21-Jul-06	04:26:32	-20	-1200	405,842.7	403,267.7	0.7	137.4	5.785	-5.782	0.199	12.7	119.4	60.6	03.57	-16.3	16.9
	2006-202T06:25:26.81	21-Jul-06	06:26:32	-18	-1080	364,353.5	361,778.5	0.7	139.1	5.746	-5.743	0.168	14.1	119.3	60.7	03.58	-16.3	18.8
	2006-202T08:25:26.81	21-Jul-06	08:26:32	-16	-960	323,134.3	320,559.3	0.8	140.8	5.708	-5.707	0.142	15.9	119.1	60.9	03.59	-16.3	20.6
	2006-202T10:25:26.81	21-Jul-06	10:26:32	-14	-840	282,172.5	279,597.5	0.9	142.6	5.673	-5.672	0.123	18.3	119.0	61.0	03.59	-16.3	22.5
	2006-202T12:25:26.81	21-Jul-06	12:26:32	-12	-720	241,452.0	238,877.0	1.0	144.3	5.641	-5.640	0.114	21.3	119.0	61.0	04.00	-16.3	24.4
	2006-202T14:25:26.81	21-Jul-06	14:26:32	-10	-600	200,952.3	198,377.3	1.2	146.1	5.612	-5.611	0.117	25.6	118.9	61.1	04.00	-16.3	26.3
	2006-202T16:25:26.81	21-Jul-06	16:26:32	-8	-480	160,648.0	158,073.0	1.5	147.9	5.587	-5.586	0.136	32.1	118.9	61.1	04.00	-16.3	28.1
	2006-202T18:25:26.81	21-Jul-06	18:26:32	-6	-360	120,507.0	117,932.0	2.0	149.7	5.568	-5.566	0.177	42.7	119.0	61.0	04.01	-16.3	30.0
	2006-202T19:25:26.81	21-Jul-06	19:26:32	-5	-300	100,485.7	97,910.7	2.3	150.6	5.562	-5.558	0.211	51.3	119.1	60.9	04.01	-16.3	31.0
	2006-202T20:25:26.81	21-Jul-06	20:26:32	-4	-240	80,489.5	77,914.5	2.9	151.6	5.558	-5.552	0.262	64.0	119.2	60.7	04.01	-16.3	31.9
	2006-202T21:25:26.81	21-Jul-06	21:26:32	-3	-180	60,512.3	57,937.3	3.7	152.5	5.558	-5.547	0.348	85.1	119.5	60.5	04.01	-16.3	32.8
	2006-202T22:25:26.81	21-Jul-06	22:26:32	-2	-120	40,550.8	37,975.8	5.5	153.5	5.566	-5.542	0.519	127.1	120.0	60.0	04.01	-16.3	33.8
	2006-202T23:25:26.81	21-Jul-06	23:26:32	-1	-60	20,635.6	18,060.6	10.7	154.6	5.602	-5.508	1.019	250.2	121.4	58.6	04.00	-16.3	34.7
	2006-202T23:55:26.81	21-Jul-06	23:56:32	-1	-30	10,826.5	8,251.5	20.4	155.3	5.671	-5.328	1.943	480.3	123.3	56.7	03.59	-16.3	35.2
	2006-203T00:10:26.81	22-Jul-06	00:11:32	0	-15	6,236.3	3,661.3	36.7	156.2	5.777	-4.691	3.372	851.3	124.1	55.9	03.57	-16.3	35.4
	2006-203T00:20:26.81	22-Jul-06	00:21:32	0	-5	3,921.2	1,346.2	67.5	159.0	5.922	-2.513	5.363	1432.8	117.4	62.6	03.46	-16.3	35.6
T16_26TI	2006-203T00:25:26.81	22-Jul-06	00:26:32	0	0	3,525.0	950.0	85.1	-43.4	5.966	0.009	5.966	1638.1	105.3	74.7	17.16	-16.3	35.6
	2006-203T00:30:26.81	22-Jul-06	00:31:32	0	5	3,926.2	1,351.2	58.3	-27.3	5.922	2.526	5.356	1430.6	90.5	89.5	16.11	-16.3	35.7
	2006-203T00:40:26.81	22-Jul-06	00:41:32	0	15	6,245.7	3,670.7	27.5	-25.4	5.777	4.694	3.367	849.9	73.7	106.3	16.05	-16.3	35.9
	2006-203T00:55:26.81	22-Jul-06	00:56:32	1	30	10,837.2	8,262.2	11.3	-24.6	5.671	5.328	1.941	479.8	66.1	113.9	16.02	-16.3	36.1
	2006-203T01:25:26.81	22-Jul-06	01:26:32	1	60	20,646.8	18,071.8	1.6	-23.9	5.602	5.508	1.019	250.1	62.3	117.7	16.01	-16.3	36.6
	2006-203T02:25:26.81	22-Jul-06	02:26:32	2	120	40,563.1	37,988.1	-3.6	-22.8	5.567	5.543	0.518	127.0	60.5	119.5	16.01	-16.3	37.5
	2006-203T03:25:26.81	22-Jul-06	03:26:32	3	180	60,528.3	57,953.3	-5.4	-21.8	5.559	5.549	0.347	85.1	60.0	120.0	16.01	-16.3	38.5
	2006-203T04:25:26.81	22-Jul-06	04:26:32	4	240	80,514.3	77,939.3	-6.3	-20.8	5.561	5.555	0.260	64.0	59.7	120.3	16.00	-16.3	39.4
	2006-203T05:25:26.81	22-Jul-06	05:26:32	5	300	100,528.4	97,953.4	-6.8	-19.8	5.568	5.564	0.206	51.2	59.5	120.5	16.00	-16.3	40.3
	2006-203T06:25:26.81	22-Jul-06	06:26:32	6	360	120,582.1	118,007.1	-7.2	-18.8	5.580	5.577	0.170	42.7	59.4	120.6	16.00	-16.3	41.3
	2006-203T08:25:26.81	22-Jul-06	08:26:32	8	480	160,858.2	158,283.2	-7.6	-16.9	5.615	5.613	0.124	32.0	59.2	120.8	16.00	-16.3	43.2
	2006-203T10:25:26.81	22-Jul-06	10:26:32	10	600	201,450.1	198,875.1	-7.8	-14.9	5.666	5.665	0.098	25.6	59.0	121.0	15.59	-16.3	45.0
	2006-203T12:25:26.81	22-Jul-06	12:26:32	12	720	242,480.4	239,905.4	-7.9	-12.9	5.736	5.735	0.088	21.2	58.9	121.1	15.59	-16.3	46.9
	2006-203T14:25:26.81	22-Jul-06	14:26:32	14	840	284,090.5	281,515.5	-8.0	-10.9	5.828	5.827	0.094	18.1	58.8	121.2	15.58	-16.3	48.8
	2006-203T16:25:26.81	22-Jul-06	16:26:32	16	960	326,445.8	323,870.8	-8.0	-8.9	5.944	5.943	0.113	15.8	58.6	121.4	15.58	-16.3	50.7
	2006-203T18:25:26.81	22-Jul-06	18:26:32	18	1080	369,741.2	367,166.2	-8.0	-6.9	6.090	6.089	0.140	13.9	58.5	121.5	15.57	-16.3	52.5
	2006-203T20:25:26.81	22-Jul-06	20:26:32	20	1200	414,207.8	411,632.8	-7.9	-4.8	6.272	6.269	0.173	12.4	58.3	121.6	15.56	-16.3	54.4
	2006-204T00:25:26.81	23-Jul-06	00:26:32	24	1440	507,815.4	505,240.4	-7.7	-0.8	6.770	6.765	0.253	10.1	58.1	121.9	15.55	-16.3	58.2

# 1.5 PLAYBACK TIMELINE

026TI (T16) Playback Timeline

Created July 7, 2006

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)		Start Playback (Pacific Time)	
				Best Estimate	~Latest Estimate	Best Estimate	~Latest Estimate
CAPS_026OT_SURVEY002_PRIME	CAPS_16000	2006-201T23:51:00	-01T00:33	22-Jul Sat 03:29 PM	Sat 03:29 PM	22-Jul Sat 08:29 AM	Sat 08:29 AM
CIRS_026IC_DSCALSHRT001_RIDER	CIRS_4000	2006-201T23:51:00	-01T00:33	22-Jul Sat 03:29 PM	Sat 03:29 PM	22-Jul Sat 08:29 AM	Sat 08:29 AM
INMS_026OT_MAGTAIL002_CAPS	INMS_1498	2006-201T23:51:00	-01T00:33	22-Jul Sat 03:29 PM	Sat 03:29 PM	22-Jul Sat 08:29 AM	Sat 08:29 AM
MAG_026OT_MAGTAIL001_MAPS	MAG_1976	2006-201T23:51:00	-01T00:33	22-Jul Sat 03:29 PM	Sat 03:29 PM	22-Jul Sat 08:29 AM	Sat 08:29 AM
RPWS_026OT_MAGTAIL002_CAPS	RPWS_30464	2006-201T23:51:00	-01T00:33	22-Jul Sat 03:29 PM	Sat 03:29 PM	22-Jul Sat 08:29 AM	Sat 08:29 AM
MIMI_026TI_MAGTAIL002_RIDER	MIMI_8000	2006-201T23:51:01	-01T00:33	22-Jul Sat 03:29 PM	Sat 03:29 PM	22-Jul Sat 08:29 AM	Sat 08:29 AM
CIRS_026TI_FIRNADCMP003_VIMS	CIRS_4000	2006-202T00:36:26	-00T23:48	22-Jul Sat 03:32 PM	Sat 03:32 PM	22-Jul Sat 08:32 AM	Sat 08:32 AM
ISS_026TI_GLOBALMAP001_VIMS	ISS_Phot_1_by_1	2006-202T00:36:26	-00T23:48	22-Jul Sat 03:32 PM	Sat 03:32 PM	22-Jul Sat 08:32 AM	Sat 08:32 AM
VIMS_026TI_GLOBALMAP001_PRIME	VIMS_18432	2006-202T00:36:26	-00T23:48	22-Jul Sat 03:32 PM	Sat 03:32 PM	22-Jul Sat 08:32 AM	Sat 08:32 AM
CAPS_026SA_SURVEY001_RIDER	CAPS_16000	2006-202T09:55:00	-00T14:29	22-Jul Sat 04:18 PM	Sat 04:35 PM	22-Jul Sat 09:18 AM	Sat 09:35 AM
MAG_026OT_SURVEY001_PRIME	MAG_1976	2006-202T09:55:00	-00T14:29	22-Jul Sat 04:18 PM	Sat 04:35 PM	22-Jul Sat 09:18 AM	Sat 09:35 AM
MIMI_026CO_SURVEY001_RIDER	MIMI_8000	2006-202T09:55:00	-00T14:29	22-Jul Sat 04:18 PM	Sat 04:35 PM	22-Jul Sat 09:18 AM	Sat 09:35 AM
RPWS_026TI_OUTSURVEY001_PRIME	RPWS_30464	2006-202T09:55:00	-00T14:29	22-Jul Sat 04:18 PM	Sat 04:35 PM	22-Jul Sat 09:18 AM	Sat 09:35 AM
CDA_026HY_2400HYORX028_RIDER	CDA_524	2006-202T10:47:44	-00T13:37	22-Jul Sat 04:22 PM	Sat 04:41 PM	22-Jul Sat 09:22 AM	Sat 09:41 AM
CAPS_026IC_ELSCAL001_RIDER	CAPS_16000	2006-202T12:00:00	-00T12:24	22-Jul Sat 04:27 PM	Sat 04:48 PM	22-Jul Sat 09:27 AM	Sat 09:48 AM
INMS_026TI_16INBD001_RADAR	INMS_1498	2006-202T12:45:33	-00T11:39	22-Jul Sat 04:36 PM	Sat 04:58 PM	22-Jul Sat 09:36 AM	Sat 09:58 AM
CDA_026DR_1700DUST141_RIDER	CDA_524	2006-202T12:48:44	-00T11:36	22-Jul Sat 04:36 PM	Sat 04:58 PM	22-Jul Sat 09:36 AM	Sat 09:58 AM
CIRS_026TI_MIRLMBINT002_PRIME	CIRS_4000	2006-202T15:25:26	-00T08:59	22-Jul Sat 04:47 PM	Sat 05:14 PM	22-Jul Sat 09:47 AM	Sat 10:14 AM
CIRS_026TI_MIRLMBINT002_SI	ISS_SUPPORT_IMAGING	2006-202T15:25:26	-00T08:59	22-Jul Sat 04:47 PM	Sat 05:14 PM	22-Jul Sat 09:47 AM	Sat 10:14 AM
ISS_026TI_MIRLMBINT002_CIRS	ISS_Phot_1_by_1	2006-202T15:25:26	-00T08:59	22-Jul Sat 04:47 PM	Sat 05:14 PM	22-Jul Sat 09:47 AM	Sat 10:14 AM
VIMS_026TI_COMPMAP001_CIRS	VIMS_18432	2006-202T15:25:26	-00T08:59	22-Jul Sat 04:47 PM	Sat 05:14 PM	22-Jul Sat 09:47 AM	Sat 10:14 AM
RADAR_026OT_WARM4T16001_RIDER	RADAR_364800	2006-202T16:25:26	-00T07:59	22-Jul Sat 04:54 PM	Sat 05:24 PM	22-Jul Sat 09:54 AM	Sat 10:24 AM
CIRS_026TI_FIRNADCMP005_VIMS	CIRS_4000	2006-202T17:25:26	-00T06:59	22-Jul Sat 05:02 PM	Sat 05:33 PM	22-Jul Sat 10:02 AM	Sat 10:33 AM
ISS_026TI_HIRES001_VIMS	ISS_Phot_1_by_1	2006-202T17:25:26	-00T06:59	22-Jul Sat 05:02 PM	Sat 05:33 PM	22-Jul Sat 10:02 AM	Sat 10:33 AM
VIMS_026TI_HIRES001_PRIME	VIMS_18432	2006-202T17:25:26	-00T06:59	22-Jul Sat 05:02 PM	Sat 05:33 PM	22-Jul Sat 10:02 AM	Sat 10:33 AM
RADAR_026TI_16RADIOM001_PRIME	RADAR_364800	2006-202T19:05:26	-00T05:19	22-Jul Sat 05:21 PM	Sat 06:00 PM	22-Jul Sat 10:21 AM	Sat 11:00 AM
MAG_026TI_MAGTITAN001_PRIME	MAG_1976	2006-202T20:25:26	-00T03:59	22-Jul Sat 05:27 PM	Sat 06:06 PM	22-Jul Sat 10:27 AM	Sat 11:06 AM
CAPS_026TI_16INBD001_PRIME	CAPS_16000	2006-202T22:25:13	-00T01:59	22-Jul Sat 05:36 PM	Sat 06:17 PM	22-Jul Sat 10:36 AM	Sat 11:17 AM
MIMI_026TI_16INBD001_CAPS	MIMI_8000	2006-202T22:25:26	-00T01:59	22-Jul Sat 05:36 PM	Sat 06:17 PM	22-Jul Sat 10:36 AM	Sat 11:17 AM
RPWS_026TI_TIINTRMED001_PRIME	RPWS_30464	2006-202T22:25:26	-00T01:59	22-Jul Sat 05:36 PM	Sat 06:17 PM	22-Jul Sat 10:36 AM	Sat 11:17 AM
RADAR_026TI_16INSCAT001_PRIME	RADAR_364800	2006-202T22:41:26	-00T01:43	22-Jul Sat 05:39 PM	Sat 06:19 PM	22-Jul Sat 10:39 AM	Sat 11:19 AM
CAPS_026TI_16CLOSE001_PRIME	CAPS_16000	2006-202T23:25:26	-00T00:59	22-Jul Sat 05:52 PM	Sat 06:33 PM	22-Jul Sat 10:52 AM	Sat 11:33 AM
INMS_026TI_16CLOSE001_INMS	INMS_1498	2006-202T23:25:26	-00T00:59	22-Jul Sat 05:52 PM	Sat 06:33 PM	22-Jul Sat 10:52 AM	Sat 11:33 AM
MIMI_026TI_16CLOSE001_CAPS	MIMI_8000	2006-202T23:25:26	-00T00:59	22-Jul Sat 05:52 PM	Sat 06:33 PM	22-Jul Sat 10:52 AM	Sat 11:33 AM
RADAR_026TI_16INALT001_PRIME	RADAR_364800	2006-202T23:55:26	-00T00:29	22-Jul Sat 06:00 PM	Sat 06:41 PM	22-Jul Sat 11:00 AM	Sat 11:41 AM
RPWS_026TI_TICA001_PRIME	RPWS_30464	2006-202T23:55:26	-00T00:29	22-Jul Sat 06:00 PM	Sat 06:41 PM	22-Jul Sat 11:00 AM	Sat 11:41 AM
RADAR_026TI_16INLRES001_PRIME	RADAR_364800	2006-203T00:10:26	-00T00:14	22-Jul Sat 06:14 PM	Sat 06:55 PM	22-Jul Sat 11:14 AM	Sat 11:55 AM
RADAR_026TI_16HISAR001_PRIME	RADAR_364800	2006-203T00:18:26	-00T00:06	22-Jul Sat 06:33 PM	Sat 07:15 PM	22-Jul Sat 11:33 AM	Sat 12:15 PM
RADAR_026TI_16OTLRES001_PRIME	RADAR_364800	2006-203T00:32:26	-00T00:07	22-Jul Sat 07:21 PM	Sat 08:28 PM	22-Jul Sat 12:21 PM	Sat 01:28 PM
RADAR_026TI_16OTALT001_PRIME	RADAR_364800	2006-203T00:40:26	00T00:15	22-Jul Sat 07:41 PM	Sat 08:48 PM	22-Jul Sat 12:41 PM	Sat 01:48 PM
RPWS_026TI_TIINTRMED002_PRIME	RPWS_30464	2006-203T00:55:26	00T00:30	22-Jul Sat 08:12 PM	Sat 09:02 PM	22-Jul Sat 01:12 PM	Sat 02:02 PM
UVIS_026ST_ALPVIR002_PRIME	UVIS_32096	2006-203T00:55:26	00T00:30	22-Jul Sat 08:12 PM	Sat 09:02 PM	22-Jul Sat 01:12 PM	Sat 02:02 PM
UVIS_026ST_ALPVIR002_RIDER	UVIS_32096	2006-203T01:03:26	00T00:38	22-Jul Sat 08:16 PM	Sat 09:07 PM	22-Jul Sat 01:16 PM	Sat 02:07 PM
CIRS_026TI_FIRLMBINT008_UVIS	CIRS_4000	2006-203T01:10:26	00T00:45	22-Jul Sat 08:19 PM	Sat 09:11 PM	22-Jul Sat 01:19 PM	Sat 02:11 PM
CAPS_026TI_16OUTBND001_PRIME	CAPS_16000	2006-203T01:25:26	00T01:00	22-Jul Sat 08:27 PM	Sat 09:20 PM	22-Jul Sat 01:27 PM	Sat 02:20 PM
INMS_026TI_16OUTBND001_RADAR	INMS_1498	2006-203T01:25:26	00T01:00	22-Jul Sat 08:27 PM	Sat 09:20 PM	22-Jul Sat 01:27 PM	Sat 02:20 PM
MIMI_026TI_16OUTBND001_CAPS	MIMI_8000	2006-203T01:25:26	00T01:00	22-Jul Sat 08:27 PM	Sat 09:20 PM	22-Jul Sat 01:27 PM	Sat 02:20 PM
UVIS_026ST_ALPVIR003_PRIME	UVIS_32096	2006-203T01:25:26	00T01:00	22-Jul Sat 08:27 PM	Sat 09:20 PM	22-Jul Sat 01:27 PM	Sat 02:20 PM
CIRS_026TI_FIRLMBINT003_PRIME	CIRS_4000	2006-203T01:40:26	00T01:15	22-Jul Sat 08:32 PM	Sat 09:27 PM	22-Jul Sat 01:32 PM	Sat 02:27 PM
CIRS_026TI_FIRLMBINT003_SI	ISS_SUPPORT_IMAGING	2006-203T01:40:26	00T01:15	22-Jul Sat 08:32 PM	Sat 09:27 PM	22-Jul Sat 01:32 PM	Sat 02:27 PM
ISS_026TI_FIRLMBINT003_CIRS	ISS_Phot_1_by_1	2006-203T01:40:26	00T01:15	22-Jul Sat 08:32 PM	Sat 09:27 PM	22-Jul Sat 01:32 PM	Sat 02:27 PM
VIMS_026TI_LIMB001_CIRS	VIMS_18432	2006-203T01:40:26	00T01:15	22-Jul Sat 08:32 PM	Sat 09:27 PM	22-Jul Sat 01:32 PM	Sat 02:27 PM
CAPS_026SA_SURVEY002_RIDER	CAPS_16000	2006-203T02:25:26	00T02:00	22-Jul Sat 08:44 PM	Sat 09:41 PM	22-Jul Sat 01:44 PM	Sat 02:41 PM
MIMI_026CO_SURVEY002_RIDER	MIMI_8000	2006-203T02:25:26	00T02:00	22-Jul Sat 08:44 PM	Sat 09:41 PM	22-Jul Sat 01:44 PM	Sat 02:41 PM
RPWS_026SA_OUTSURVEY003_PRIME	RPWS_30464	2006-203T02:25:26	00T02:00	22-Jul Sat 08:44 PM	Sat 09:41 PM	22-Jul Sat 01:44 PM	Sat 02:41 PM
CIRS_026TI_FIRNADMAP003_PRIME	CIRS_4000	2006-203T02:40:26	00T02:15	22-Jul Sat 08:46 PM	Sat 09:43 PM	22-Jul Sat 01:46 PM	Sat 02:43 PM
CIRS_026TI_FIRNADMAP003_SI	ISS_SUPPORT_IMAGING	2006-203T02:40:26	00T02:15	22-Jul Sat 08:46 PM	Sat 09:43 PM	22-Jul Sat 01:46 PM	Sat 02:43 PM
ISS_026TI_FIRNADMAP003_CIRS	ISS_Phot_1_by_1	2006-203T02:40:26	00T02:15	22-Jul Sat 08:46 PM	Sat 09:43 PM	22-Jul Sat 01:46 PM	Sat 02:43 PM
MAG_026OT_SURVEY004_PRIME	MAG_1976	2006-203T04:25:26	00T04:00	22-Jul Sat 09:16 PM	Sat 10:17 PM	22-Jul Sat 02:16 PM	Sat 03:17 PM
CIRS_026TI_MIRLMBMAP003_PRIME	CIRS_4000	2006-203T05:25:26	00T05:00	22-Jul Sat 09:32 PM	Sat 10:36 PM	22-Jul Sat 02:32 PM	Sat 03:36 PM
CIRS_026TI_MIRLMBMAP003_SI	ISS_SUPPORT_IMAGING	2006-203T05:25:26	00T05:00	22-Jul Sat 09:32 PM	Sat 10:36 PM	22-Jul Sat 02:32 PM	Sat 03:36 PM
ISS_026TI_MIRLMBMAP003_CIRS	ISS_Phot_1_by_1	2006-203T05:25:26	00T05:00	22-Jul Sat 09:32 PM	Sat 10:36 PM	22-Jul Sat 02:32 PM	Sat 03:36 PM
CIRS_026TI_FIRNADCMP004_VIMS	CIRS_4000	2006-203T07:40:26	00T07:15	22-Jul Sat 10:01 PM	Sat 11:10 PM	22-Jul Sat 03:01 PM	Sat 04:10 PM
ISS_026TI_CLOUDMAP001_VIMS	ISS_Phot_1_by_1	2006-203T07:40:26	00T07:15	22-Jul Sat 10:01 PM	Sat 11:10 PM	22-Jul Sat 03:01 PM	Sat 04:10 PM
VIMS_026TI_CLOUDMAP001_PRIME	VIMS_18432	2006-203T07:40:26	00T07:15	22-Jul Sat 10:01 PM	Sat 11:10 PM	22-Jul Sat 03:01 PM	Sat 04:10 PM
INMS_026SA_SURVEY002_RIDER	INMS_1498	2006-203T12:25:26	00T12:00	22-Jul Sat 10:48 PM	Sun 12:09 AM	22-Jul Sat 03:48 PM	Sat 05:09 PM
CDA_026RRI_1602RINGM002_RIDER	CDA_524	2006-203T12:59:32	00T12:34	22-Jul Sat 10:54 PM	Sun 12:16 AM	22-Jul Sat 03:54 PM	Sat 05:16 PM
CIRS_026IC_DSCAL1397_RIDER	CIRS_4000	2006-203T14:45:00	00T14:20	22-Jul Sat 07:54 PM	Sat 07:54 PM	22-Jul Sat 12:54 PM	Sat 12:54 PM
CDA_026DR_1102DUST209_RIDER	CDA_524	2006-203T15:00:31	00T14:35	22-Jul Sat 07:54 PM	Sat 07:55 PM	22-Jul Sat 12:54 PM	Sat 12:55 PM
RPWS_026SA_INSURVEY001_PRIME	RPWS_30464	2006-203T18:05:00	00T17:39	22-Jul Sat 08:06 PM	Sat 08:08 PM	22-Jul Sat 01:06 PM	Sat 01:08 PM